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ABSTRACT

The use of pronunciation symbols is investigated in this paper, with emphasis on the pronunciation symbols used by the Rules of Correspondence Activity and based on the conventions employed in linguistics, the agreement and variety of the pronunciation symbols commonly used in textbooks and dictionaries, and a suggested set of pronunciation symbols for possible use by the Southwest Regional Laboratory (SWRL) in nontechnical documentation. Three tables provide further information on the pronunciation symbols used by various sources, the stress symbols used by several sources, and the number of dictionaries and textbooks using pronunciation symbols. (JM)

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THE USE OF PRONUNCIATION SYMBOLS

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ABSTRACT

The use of pronunciation symbols is described. The symbols used by the Rules of Correspondence Activity are based on conventions commonly used in linguistics. A review of symbols used by textbooks and dictionaries reveals both agreement and variety. A set of symbols for possible use by SWRL in nontechnical documentation is proposed, which is both linguistically valid and similar to what is in common use.

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THE USE OF PRONUNCIATION SYMBOLS

Bruce Cronnell

This paper investigates the use of pronunciation symbols. It has three aims:

1) To describe the pronunciation symbols used by the Rules of Correspondence Activity;
2) To describe the pronunciation symbols commonly used in textbooks and dictionaries;
3) To suggest a set of pronunciation symbols for possible use by SWRL in nontechnical documentation.

The last aim was the reason for this study. At present, SWRL does not have a standard set of pronunciation symbols for nontechnical documentation (except, possibly, as reflected by Berdiansky's, 1971, notes on First Grade Spelling). While technical linguistic symbols (such as described below) are used by several linguistics-based activities at SWRL and should continue to be used in technical linguistic documentation, the use of more readily understood symbols may be desired for some instructional materials. It is highly possible that pronunciation symbols could be valuably used in teacher's materials for the Model 2 Communication Skills Program, in the reading component and especially in the spelling component. In addition, pronunciation symbols might be profitably employed in certain pupil's materials. (Pronunciation symbols are used as part of the instruction in several commercial spelling series; Cronnell, 1971b.) This paper provides the basis for standardizing symbols for SWRL documentation of a nontechnical nature.

PRONUNCIATION SYMBOLS USED BY THE RULES OF CORRESPONDENCE ACTIVITY

The pronunciation symbols used by the Rules of Correspondence Activity (e.g., Berdiansky, Cronnell, & Koehler, 1969; Cronnell, 1971a, 1971b) are derived from common symbols used by linguists in describing American English.[1] These symbols were chosen so that they would be readily understood by linguistically knowledgeable readers. The vowel symbols are generally based on those of Kenyon and Knott (1953; hereafter, K-K) in their *Pronouncing dictionary of American English*, using the phonetic alphabet of the International Phonetic Association (1949). However, the Rules of Correspondence Activity (hereafter, RC) made a few changes as noted below.

1. The mid-central vowels in above (K-K: /əbʌv/[2]) differ slightly depending on stress: stressed /ʌ/; unstressed /ə/. This difference was not believed significant enough to warrant two symbols, and only /ə/ was used for both, a common practice in much linguistic description (e.g., Trager & Smith, 1957; hereafter, T-S).
2. While the "er" sound in bird is phonetically one sound, it was treated as a vowel plus /r/, in part to simplify spelling-sound correspondences, which would always have r and /r/ corresponding. In addition, based on the principles in (1) above, the stressed and unstressed "er" sounds were not differentiated; e.g., further, K-K: /fɝ͡ðɚ/, RC: /fə́rðər/.

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[1]See Table 1 for a listing of symbols used by the various sources referred to in this paper. All tables are at the end of the paper.

[2]Slashes (/ /) are used here to enclose pronunciation symbols. RC use of brackets ([ ]), which actually indicate a phonetic transcription, was based on the desire to avoid excessive slashes, which were also was used to indicate environment; e.g., o → [o] /__# (Rule 025) was thought easier to read than o → /o/ /__#.

3. In most dialects of English, the following vowel sets do not contrast before /r/:

   /ɪ/ and /i/, e.g., bit and beet vs. beer.

   /ɛ/, /e/, and /æ/, e.g., bet, bait and bat vs. bear.

   /ɔ/ and /o/, e.g., bought and boat vs. bore.

   /ʊ/ and /u/, e.g., put and boot vs. boor.

   In dialects without such contrasts, it is phonetically the first sound of each set which is used before /r/. However, few people can distinguish this. Moreover, in order to have consistency in spelling-sound correspondences it was felt best to generally use the second symbol; e.g., since there is a correspondence between ai and /e/ in aim, it was thought appropriate to retain the same ai - /e/ correspondence in air.[3]

4. In order to simplify writing and typing of the diphthongs in bite, bout, boy, the symbols /ay/, /aw/, and /oy/, respectively, were used (the same as T-S) instead of K-K /aɪ/, /aʊ/, and /ɔɪ/.

5. In words such as metal and button, the last syllable is technically a syllabic consonant without a vowel (K-K: /l̩/ and /n̩/; also occasionally /m̩/). However, the symbols /əl/ and /ən/ were used (as in T-S). This simplifies typing and reading, as well as the correspondences (e.g., a → /ə/, l → /l/).

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[3]The Rules of Correspondence Activity displays considerable phonetic flexibility when vowel-r combinations are involved. For example, the vowel in bare is symbolized /e/ to correspond with Rule A11 (a → [e] /__Ce#), while the vowel in bear is symbolized /ɛ/ to correspond with Rule EA31 (ea → [ɛ]). Such inconsistency was not considered important so long as the spelling-sound relationships were adequately covered for instructional purposes.

Consonant sounds were relatively easy to symbolize: most of them are the same as their most common orthographic counterparts; the rest are generally agreed on. To simplify writing and typing, the T-S symbols /š/, /ž/, /č/, and /j/ were used instead of K-K /ʃ/, /ʒ/, /tʃ/, and /dʒ/, respectively.[4] All other symbols for consonants are in common linguistic use, and, with the exception of /ŋ/, /θ/, and /ð/, seem to be used by all sources indicating pronunciation.

Thus the symbols used by RC seem to be both appropriate and adequate for indicating pronunciation for spelling-sound correspondences. They should be understandable, both within and outside of SWRL, by most sophisticated readers. Moreover, RC papers generally have a key to pronunciation symbols and/or numerous examples (e.g., Berdiansky et al. 1969).

However, when indicating pronunciation for either teachers or students, it is doubtful whether such linguistic symbols should be used. They are generally not known by teachers, much less by students. Moreover, they are not the same as those used by most dictionaries and textbooks. Of course, symbols need not be used at all, and at times may be best not used. Instead, something like "the first sound in ship" or "the vowel sound in book" could be employed. However, if used much, this seems both awkward and space-consuming. A simple set of symbols would be more efficient. In addition, for spelling instruction such

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[4]The K-K symbols for affricates, e.g., /tʃ/, indicate their dual nature: e.g., the closure of /t/ and the friction of /ʃ/; however, within English phonology they function as single units.

symbols can be related to dictionary study, which appears to be important for adequate spelling ability (see Cronnell, 1971b).

PRONUNCIATION SYMBOLS IN TEXTBOOKS AND DICTIONARIES

If pronunciation symbols are to be used for instruction, it is helpful if they are similar to--if not the same as--those employed by other sources which students may use. Thus a number of textbooks and dictionaries in common use were reviewed. (A bibliographic listing of these sources is given in a separate reference section: "Textbooks and Dictionaries Used.")

STANDARD DICTIONARIES

Three standard "adult" dictionaries were consulted:

1. *Webster's seventh new collegiate dictionary*, which uses the same symbols as the massive *Webster's third new international dictionary*, although the latter has additional symbols to indicate dialect variation.
2. *Webster's new world dictionary*, which is not the same "Webster."
3. *The American Heritage dictionary of the English language*, which is a relatively new entry in the field.

CHILDREN'S DICTIONARIES

The four dictionaries listed as "supplementary textbooks" by the California State Department of Education (1971) were consulted:

4. *Thorndike Barnhart beginning dictionary* (grade three).
5. *The Holt intermediate dictionary of American English* (grade four).
6. *Webster's new practical school dictionary* (grade five). Same publisher as 1.

7. *Webster's new world dictionary (elementary edition)* (grade six). Same publisher as 2.

In addition, because its encyclopedia is commonly used, the following was consulted:

8. *The World Book dictionary.*

TEXTBOOKS

The "basic textbooks" for literature adopted by the California State Department of Education (1971) were consulted:

9. *Reading caravan series.*
10. *The bookmark reading series.*

The "basic textbook" for English (grades 3-6) adopted by the California State Department of Education (1971) was consulted:

11. *The Roberts English series.*

The six spelling series reviewed by Cronnell (1971b) were consulted:

12. Economy.
13. Follett.
14. Lippincott.
15. McGraw-Hill. This is the "basic textbook" for spelling (grades 1-6) adopted by the California State Department of Education (1971).
16. Scott, Foresman.
17. SRA.

In addition, the following spelling series was consulted:

18. Houghton Mifflin.

While there is no guarantee that this set of books constitutes a representative sample (especially of textbooks), it seems large enough to give a rather thorough picture of pronunciation symbols commonly in use.

For each of the eighteen sources, pronunciation symbols are listed in Table 1. Included are all vowel symbols as well as those consonant symbols for which RC does not use the common orthographic equivalent. Compilation of this list was very difficult, since many sources provide inadequate keys to pronunciation, especially for vowel-r combinations, all of which may not be included. Also compiled (Table 2) was a listing of stress ("accent") markings used by the various sources.

As would be expected, the various sources are not all different. Dictionaries 1 and 6 are from the same publisher and differ in only a few symbols; the same is true of dictionaries 2 and 7. Dictionary 4 and spelling series 16 are from the same publisher (Scott, Foresman) and have exactly the same symbols. Spelling series 15 also uses the symbols of dictionary 4; while spelling series 14 claims to use dictionary 4's symbols, it differs slightly. Other similarities also exist. The two series which differ greatest from the rest are 11 (which generally uses the same letters but printed as ligatures) and 12 (which uses an old "Webster's" system).

The symbols used by all the dictionaries and texts have been tabulated in Table 3. Conclusions are given below. (When symbols are used here, RC symbols, for reference, are in brackets; text and dictionary symbols are in slashes.)

1. There is general agreement on four of the "long vowel" sounds:

   [i] - /ē/
   [e] - /ā/
   [o] - /ō/
   [ay] - /ī/

   There is somewhat less agreement on "long u." Some sources use separate symbols for [u] and [yu] (the letter name); the others use one symbol for [u] and precede it with /y/ for [yu]. To be consistent with the other "long vowel" symbols, one would expect [u] - /ū/ and [yu] - /yū/, but only two series (11 and 13) do that.

2. Similarly, there is general agreement on four of the "short vowel" sounds:

   [ɪ] - /i/
   [ɛ] - /e/
   [æ] - /a/
   [ə] (stressed) - /u/

   There is considerable disagreement on "short o" (RC: [ɑ]). The most common symbol is /ä/, followed by /o/. Most sources using /ä/ also use /o/, alone or with some diacritic; if so, the /ä/ seems to be used when the spelling is a, the /o/ when the spelling is o.

3. There is fair agreement on the other two simple vowels:

   [ɔ] - /ȯ/
   [ʊ] - /u̇/

   However, in the case of the latter, /oo/ (in some form) is a contender.

4. There is little disagreement on the other diphthongs, with the exception of variable diacritics:

[aw] - /ou/
[oy] - /oi/

5. There is very good agreement on unstressed vowels:

[ə] (unstressed) - /ə/

This is also true in combination with /r/:

[ər] (unstressed) - /ər/

However, for syllabic consonants, there is a near tie between forms with and without /ə/:

[əl] - /əl/, /l/
[ən] - /ən/, /n/

6. Vowel-r combinations fare poorly, probably in part because of dialect variations. There is good agreement on only one:

[ar] - /är/

The stressed "er" sound has its vocalic quality indicated by /ə/, /ė/ or a diacritic marked form of /u/; these possibilities are nearly the same in frequency.

The representation of the other vowel-r combinations reflects the fact (discussed earlier) that several vowel sets do not contrast before /r/ in most dialects. Some sources use multiple symbols; others seem to opt for the lax member of the noncontrasting pair:

[ir] - /ir/ (= RC [ɪr])
[or] - /ôr/ (= RC [ɔr])
[ur] - /ůr/ (= RC [ʊr])

In the case of the vowel as in bear, there is less agreement. Frequently an additional symbol is used: [er] - /ãr/ or /år/, or the system followed above is used: [er] - /er/ (=RC [ɛr]).

7. There is generally good agreement on consonants. In general, orthographic equivalents are used; in cases where RC usage is different, the following were found:

   [č] - /ch/
   [ǰ] - /j/
   [š] - /sh/
   [ž] - /zh/
   [θ] - /th/
   [ŋ] - /ng/

   Since /th/ is used for [θ] and since <u>th</u> is also the spelling for [ð], the latter presents a problem. The solution is to either use a capitalized form, generally with markings (/ŦH/) or to mark the lower case form in some fashion.

8. Primary stress is generally marked by a heavy mark (’’ in Tables 2 and 3) and secondary stress by a light mark (’). Both marks are generally placed after the syllable. (Some texts, incidentally, are rather lax when it comes to marking secondary stress.)

SUGGESTED PRONUNCIATION SYMBOLS FOR INSTRUCTIONAL USE

In this section, pronunciation symbols will be proposed for possible use in the Model 2 Communication Skills Program. For both reading and spelling, they may be employed in teacher's manuals; for spelling they may also be employed in pupil's materials. The choice of symbols reflects several criteria: common usage by dictionaries and texts; linguistic validity; consistency; spelling-sound relations. (In the following discussion, brackets will mark RC symbols, slashes will mark the proposed forms.)

1. The "long vowels" are symbolized by their letter names with a macron.

   [e] - /ā/
   [i] - /ē/
   [ay] - /ī/
   [o] - /ō/
   [u] - /ū/
   [yu] - /yū/

   The first four are commonly used; the last two are consistent with the whole set and are similar to common usage.

2. The "short vowels" are symbolized by their common orthographic correspondence.

   [æ] - /a/
   [ɛ] - /e/
   [ɪ] - /i/
   [ɑ] - /o/
   [ə] (stressed) - /u/

   This is a consistent set, commonly used.

3. The other two simple vowels follow general practice.

   [ɔ] - /ô/
   [ʊ] - /o͝o/

   For purposes of typing, it may be easier to substitute /oo/ for /o͝o/.

4. The other two diphthongs follow general practice.

   [aw] - /ou/
   [oy] - /oi/

5. Unstressed vowels are symbolized by /ə/, which is a common practice.

   [ə] (unstressed) - /ə/
   [ər] (unstressed) - /ər/
   [əl] - /əl/
   [ən] - /ən/

6. Vowel-r combinations follow general practice (which is not very clear anyway). When there are non-contrasting vowels, the lax member is used.

[ar] - /är/
[er] - /er/
[ir] - /ir/
[or] - /ôr/
[ur] - /u̇r/
[ər] (stressed) - /ėr/

For purposes of typing, it may be easier to substitute /ər/ or /ur/ for /ėr/.

7. Consonants are represented by their common orthographic equivalents.

[b] - /b/
[č] - /ch/
[d] - /d/
[f] - /f/
[g] - /g/
[h] - /h/
[ǰ] - /j/
[k] - /k/
[l] - /l/
[m] - /m/
[n] - /n/
[ŋ] - /ng/
[p] - /p/
[r] - /r/
[s] - /s/
[š] - /sh/
[t] - /t/
[θ] - /th/
[v] - /v/
[w] - /w/
[y] - /y/
[z] - /z/

Since [ž] has no common orthographic equivalent, the symbol in general use is employed.

[ž] - /zh/

The common orthographic equivalent for [ð] is <u>th</u>, which is already used for [θ]. Thus the underlined form is used. This is found in some sources, and is similar to the barred symbol, but simpler for typing.

[ð] -/<u>th</u>/

8. The common stress symbols of light and heavy marks are inappropriate for typing. Thus the symbols used by the Rules of correspondence Activity are proposed.

['] - /'/

[ˋ] - /ˋ/

These proposed pronunciation symbols are consistent, clear, and generally in common use by dictionaries and textbooks. They should be useful for Model 2 Communication Skills instruction.

TABLE 1: PRONUNCIATION SYMBOLS USED BY VARIOUS SOURCES

Examples	Rules of Correspondence Activity	Kenyon-Knott (IPA)	Trager-Smith	1. Webster's Seventh Collegiate Dictionary	2. Webster's New World Dictionary	3. American Heritage Dictionary	4. Thorndike Barnhart Beginning Dictionary	5. Holt Intermediate Dictionary	6. Webster's New Practical School Dictionary	7. Webster's New World Dictionary (elementary ed.)	8. World Book Dictionary
beet	i	i	iy	ē	ē	ē	ē	ē	ē	ē	ē
bit	ɪ	ɪ	i	i	i	i	i	i	i	i	i
bait	e	e	ey	ā	ā	ā	ā	ā	ā	ā	ā
bet	ɛ	ɛ	e	e	e	e	e	e	e	e	e
bat	æ	æ	æ	a	a	a	a	a	a	a	a
pot	a	a	a	o, ä	o, ä	o, ä	o, ä	o, ä	ä	o, ä	o, ä
bought	ɔ	ɔ	ɔ	ô	ô	ô	ô	ô	ô	ô	ô
boat	o	o	ow	ō	ō	ō	ō	ō	ō	ō	ō
put	ʊ	ʊ	u	o͝o	o͝o	o͝o	o͝o	o͝o	o͝o	o͝o	o͝o
boot	u	u	uw	o͞o	o͞o	o͞o	o͞o	o͞o	o͞o	o͞o	o͞o
butte	yu	ju	yuw	yo͞o	yo͞o	yo͞o	yo͞o	yo͞o	yo͞o	yo͞o	yo͞o
but	ə	ʌ	ə	u	u	u	u	u	u	u	u
alone	ə	ə	ə, ɨ	ə	ə	ə	ə	ə	ə	ə	ə
bite	ay	aɪ	ay	ī	ī	ī	ī	ī	ī	ī	ī
bout	aw	aʊ	aw	au	ou	ou	ou	ou	au	ou	ou
boy	oy	ɔɪ	oy	oi	oi	oi	oi	oi	oi	oi	oi
burn	ər	ɝ	ər	ər	ûr	ûr	ėr	ûr	ər	ûr	ėr
butter	ər	ə˞	ər	ər	ər	ər	ər	ər	ər	ər	ər
bottle	əl	l̩	əl	əl	ᵊl	l	l	əl	l	ᵊl	əl
button	ən	n̩	ən	ən	ᵊn	n	n	ən	n	ᵊn	ən
beer	ir	ɪr, ir	ir	ir	ēr	îr, ĭr	ir	ēr	ir	ir	ir
bear	er	ɛr, ɛ˞	er	er, ar	âr	ā͡r, ĕr, ə͡r	ār	âr	er, ar	er	ār
bar	ar	ar	ar	är	är	är	är	är	är	är	är
bore	or	ɔr, or	or	ōr, ôr	ôr	ō͡r, ŏr, o͡r	ōr	ôr, ōr	ōr, ör	ôr	ôr
boor	ur	ur	ur	u͡r	oor	o͞o͡r	u͡r	oor	u͡r	oor	u͡r
chair	č	tʃ	č	ch	ch	ch	ch	ch	ch	ch	ch
joy	ǰ	dʒ	ǰ	j	j	j	j	j	j	j	j
ship	š	ʃ	š	sh	sh	sh	sh	sh	sh	sh	sh
vision	ž	ʒ	ž	zh	zh	zh	zh	zh	zh	zh	zh
thin	θ	θ	θ	th	th	th	th	th	th	th	th
them	ð	ð	ð	th	*th*	*th*	ŦH	~~th~~	th	*th*	ŦH
sing	ŋ	ŋ	ŋ	ng	ŋ	ng	ng	ng	ng	ng	ng

see notes on following page)

9. Reading Caravan Series	10. Bookmark Reading Series	11. Roberts English Series	12. Economy Spelling	13. Follett Spelling	14. Lippincott Spelling	15. McGraw-Hill Spelling	16. Scott, Foresman Spelling	17. SRA Spelling	18. Houghton Mifflin Spelling
yu	yo͞o	yo͞o	yo͞o	yo͞o	yo͞o	yo͞o	yo͞o	yo͞o	yo͞o
ə u	ə u	ə u	ə u	ə	ə u	ə u	ə u	ə u	ə u
ī	ī	ī	ī	ī	ī	ī	ī	ī	ī
au ou	ou	ou*	ou	au	ou	ou	ou	ou	ou
oi	oi	oi	oi	oi	oi	oi	oi	oi	oi
ər	ûr	ər	ûr	ər	ėr	ėr	ėr	ėr	ėr
r	ər	ər	ər	ər	ər	ər	ər	ər	ər
l	əl	ə-l	—	əl	əl	l	l	əl	əl
n	ən	ə-n	—	ən	ən	n	n	ən	ən
ir	ir	ēr	ēr	ir	ēr	ir	ir	ir	ēr
ar	ar	ār	ār	er	ăr	ăr,er	ăr	ăr	ār
är	är	or	är	ar	är	är	är	är	är
ȯr	ȯr	?ōr	ȯr	ȯr	ȯr	ȯr	ȯr	ȯr	ȯr
ur	o͞or	?ūr	ūr	—	u͞r	u̇r	u̇r	u̇r	u̇r
ch	ch	ch*	ch	ch	ch	ch	ch	ch	ch
j	j	j	j	j	j	j	j	j	j
sh	sh	sh*	sh	sh	sh	sh	sh	sh	sh
zh	zh	zh*	zh	—	zh	zh	zh	zh	zh
th	th	th*	th	th	th	th	th	th	th
th	~~th~~	~~th*~~	~~th~~	TH	~~TH~~	~~TH~~	~~TH~~	~~TH~~	~~th~~
ng	ng	ng*	ng	ng	ng	ng	ng	ng	ng

NOTES ON TABLE 1

(Numbers refer to sources)

RC: Explained in text.

K-K: The use of /j/ for /y/ is of European origin; cf, German ja. Additional symbols and variations can be used to indicate dialect difference.

T-S: Additional symbols and variations can be used to indicate dialect differences.

5: An italicized *r* apparently indicates that it is silent in some dialects.

11: Asterisked symbols are ligatures; symbols preceded by "?" are not given in the text, but have been extrapolated from other symbols used.

12: Several symbols given inside the front cover appear not to be used in the text, including those with "ˌ" and the various ones for unstressed /ə/ (including, beside the one listed, ă, ĕ, ĭ, ŏ, ŭ). No symbols were found for /əl/ or /ən/ and because of irregular usage of symbols in the text, cannot be extrapolated.

13: No symbols were found for /ur/ or /ž/; it may be guessed that they would be "ur" and "zh", respectively.

TABLE 2

STRESS SYMBOLS USED BY VARIOUS SOURCES

	Primary Stress	Secondary Stress
Example	annoy	fascinate
Rules of Correspondence Activity	' over vowel	` over vowel
Kenyon-Knott (IPA)	ˈ before syllable	ˌ before syllable
Trager-Smith	' over vowel	` over vowel[1]
1. Webster's Seventh Collegiate Dictionary	ˈ before syllable	ˌ before syllable
2. Webster's New World Dictionary	'' after syllable[2]	' after syllable
3. American Heritage Dictionary	'' after syllable[2]	' after syllable
4. Thorndike Barnhart Beginning Dictionary	'' after syllable[2]	' after syllable
5. Holt Intermediate Dictionary	'' after syllable[2]	' after syllable
6. Webster's New Practical School Dictionary	ˈ before syllable	ˌ before syllable
7. Webster's New World Dictionary (elementary ed.)	'' after syllable[2]	' after syllable
8. World Book Dictionary	'' after syllable[2]	' after syllable
9. Reading Caravan Series	ˈ before syllable	ˌ before syllable
10. Bookmark Reading Series	'' after syllable[2]	' after syllable
11. Robert's English Series	____	____
12. Economy Spelling	____	____

[1]Called "tertiary" by Trager-Smith; their "secondary" occurs only in utterances longer than a word.

[2]Double accent marks ('') are used to indicate the extra heavy mark which is actually employed, but difficult to reproduce with a typewriter; in such sources secondary stress is a lighter mark.

Table 2 (continued)

	Primary Stress	Secondary Stress
13. Follett Spelling	syllable underlined	_____
14. Lippincott Spelling	'' after syllable	' after syllable
15. McGraw-Hill Spelling	'' after syllable[2]	' after syllable
16. Scott, Foresman Spelling	'' after syllable[2]	' after syllable
17. SRA Spelling	'' after syllable[2]	' after syllable
18. Houghton Mifflin Spelling	'' after syllable[2]	' after syllable

TABLE 3

NUMBER OF DICTIONARIES AND TEXTBOOKS USING PRONUNCIATION SYMBOLS

RC Symbol	Dictionary and Textbook Symbols (frequency in parentheses)			
/i/	ē (18)	ę̄ (1)		
/ɪ/	i (15)	i̊ (3)		
/e/	ā (18)	ą̄ (1)		
/ɛ/	e (15)	ĕ (3)		
/æ/	a (15)	ă (3)		
/a/	ä (12)	o (9)	ŏ (3)	
		å (1)	a (1)	
/ɔ/	ô (12)	ȯ (5)	au[1] (1)	
		o̊ (1)		
/o/	ō (18)	o̥ (1)		
/u/	û (10)	o͝o (4)	oo (2)	
		oo[1] (1)	u (1)	
/u/	ü (10)	o͞o (6)	ū (2)	
/yu/	ū (7)	yü (5)	yo͞o (4)	
		yū (2)	u̇ (1)	
/ə/ (stressed)	u (12)	ŭ (3)	ə (3)	
/ə/ (unstressed)	ə (17)	ȧ, ă, ĕ, ĭ, ŏ, ŭ (1)		
/ay/	ī (18)			
/aw/	ou (13)	au̇ (3)	âu (1)	
		ou[1] (1)		
/oy/	oi (14)	oi (3)	ôi (1)	
/ər/ (stressed)	ėr (7)	ər (5)	ũr (2)	
		ûr (4)		
/ər/	ər (15)	ər (1)	ẽr (1)	
		r (1)		
/əl/	əl (7)	l (6)	'l (2)	
		ᵊl (1)	ə-l (1)	
		no symbol (1)		
/ən/	ən (7)	n (6)	'n (2)	
		ᵊn (1)	ə-n (1)	
		no symbol (1)		

[1]Ligature.

Note: While there are only 18 sources being considered here, the total number of symbols per sound may be greater because some sources use multiple symbols.

Table 3 (continued)

RC Symbol	Dictionary and Textbook Symbols (frequency in parentheses)			
/ir/	ir (11)	ẽr (3)	ȇr (2)	
		ęr (1)	îr (1)	
		ir (1)		
/er/	ãr (6)	ȃr (5)	er (5)	
		ar (2)	ā̆r (2)	
		ȁr (1)	ă̄r (1)	
		ĕr (1)		
/ar/	är (16)	ȁr (1)	or (1)	
/or/	ȏr (13)	ọ̄r (5)	o̅r (4)	
		ŏr (1)		
/ur/	u̇r (9)	o̅or (3)	o̅o̅r (1)	
		o̅o̅r (1)	ür (1)	
		u̇ (1)	u̅r (1)	
		no symbol (1)		
/č/	ch (17)	ch[1] (1)		
/ǰ/	j (18)			
/š/	sh (17)	sh[1] (1)		
/ž/	zh (16)	zh[1] (1)	no symbol (1)	
/θ/	th (17)	th[1] (1)		
/ȏ/	TH (6)	~~th~~ (4)	th (3)	
		th (3)	TH (1)	
		~~th~~[1] (1)		
/ŋ/	ng (15)	ŋ (2)	ng[1] (1)	

' ''(heavy mark) after syllable (12)
[1]before syllable (3) no symbol (2)
syllable underlined (1)

` ' (light mark) after syllable (12)
,before syllable (3) no symbol (3)

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